Complete Summary

GUIDELINE TITLE

Cross-sectional diagnostic imaging in lung cancer.

BIBLIOGRAPHIC SOURCE(S)

Cancer Care Ontario (CCO). Cross-sectional diagnostic imaging in lung cancer. Toronto (ON): Cancer Care Ontario (CCO); 2006 Apr 18. 25 p. [30 references]

GUIDELINE STATUS

This is the current release of the guideline.

Please visit the Cancer Care Ontario Web site for details on any new evidence that has emerged and implications to the guidelines.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Lung cancer

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Oncology
Radiology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To provide some initial guidance to Ontario health care providers and planners on the use of cross-sectional diagnostic imaging technology for patients with lung cancer
- The recommendations are intended to:
    - Promote evidence-based practice
    - Provide guidance to clinicians about the most appropriate imaging techniques to use in the workup and management of their patients
    - Provide useful information to those charged with planning for the number of imaging machines needed for cancer patients in Ontario
    - Be used to monitor the use of imaging modalities in patients with cancer

TARGET POPULATION

Patients with lung cancer

INTERVENTIONS AND PRACTICES CONSIDERED

1. Computed tomography (CT)
2. Magnetic resonance imaging (MRI)

Note: The Panel originally included ultrasound in its review, but agreed that the use for this type of cancer is limited and decided not to consider it.

MAJOR OUTCOMES CONSIDERED

- Disease recurrence
- Quality of life
- Survival
- Frequency of true- and false-positive tests
- Sensitivity and specificity of diagnostic tests
- Positive and negative predictive value

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Literature Search Strategy

An inventory of diagnostic imaging guidelines published in English after 1998 was completed in October 2003 and used to identify existing evidence-based guidelines. English-language evidence published between 1980 and 2004 was searched for through MEDLINE, EMBASE, and the Cochrane Databases of Systematic Reviews and Abstracts of Reviews of Effects. Meta-analyses, systematic reviews, and trials reporting on sensitivity and specificity were sought. Search strategies were modified for each database and disease site (see Appendix 1 in the original guideline document).

Eligibility Criteria

Inclusion

Studies were included if they satisfied all of the following criteria:

1. Included patients with confirmed cancer of the lung
2. Evaluated computed tomography (CT), magnetic resonance imaging (MRI) or ultrasonography
3. Described an objective diagnostic standard
4. Reported data for disease recurrence, quality of life, survival, frequency of true- and false-positive tests for extent of disease, or sensitivity, specificity, positive predictive value or negative predictive value to detect distant metastases
5. Were randomized trials, comparative cohort studies, case series (prospective or retrospective) with more than 12 *consecutive* patients, meta-analyses (published in English after 1998) of data from randomized trials, comparative cohort studies or case series, or evidence-based clinical practice guidelines

Exclusion

Letters, editorials, and meeting abstracts were not included. As noted in the Methods section of the original guideline document, a post-hoc decision was made to exclude studies of ultrasound in lung cancer.

NUMBER OF SOURCE DOCUMENTS

Eligible papers for the systematic review on imaging in lung cancer included four evidence-based guidelines, one report evaluating quality indicators, two randomized trials, two comparative cohort studies, three pooled analyses of case series reports, and 15 case series reports.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Committee)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

In 2003, Cancer Care Ontario (CCO) established a small working panel, the Diagnostic Imaging Panel, consisting of medical, radiation, and surgical oncologists; diagnostic radiologists; and methodologists, to review guidelines published during the last five years on the use of cross-sectional imaging in oncology. After examining documents from nineteen guideline developers, the panel concluded that the available guidelines did not focus on the particular issues of interest here. Therefore, the panel decided to review the primary research and develop recommendations for Ontario on the use of computed tomography (CT), magnetic resonance imaging (MRI), and ultrasound for the initial staging, assessment of tumour response during active treatment, and follow-up for patients with six types of cancer: lymphoma, breast cancer, colorectal cancer, prostate cancer, lung cancer, and ovarian cancer. The potential utility of the different imaging technologies may vary across disease sites. The working group developing the recommendations for lung cancer agreed that the use of ultrasound in this type of cancer is limited currently and would not be considered. In contrast, bone scans are commonly used to detect metastatic disease in lung cancer and, although not within the scope of this report, may be a topic for a future report.

A systematic review of the literature identified few randomized studies to provide guidance on the use of cross-sectional imaging in the management of patients with cancer; therefore, it was decided to also include cohort studies and case series reports in the evidence review and incorporate expert opinion in the development of the recommendations. The initial selection and summary of relevant evidence was completed by methodologists at the Program in Evidence-Based Care in consultation with the clinical experts from the Diagnostic Imaging Panel.

The systematic reviews served as the evidentiary foundation to inform the deliberation of clinical experts. Formal and informal consultations with radiologists was facilitated by Dr. Anne Keller, diagnostic imaging representative of the CCO Clinical Council, and undertaken with members who participated in the provincial MRI and CT Wait Times Strategy Expert Panel and the CCO Diagnostic Imaging Panel. In addition, consultations with oncologists were undertaken, mainly through the relevant disease site groups of CCO's Program in Evidence-Based

Care. The recommendations, which are presented in the format developed by the Canadian Association of Radiologists, emerged through these consultations.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Expert Consultation

The draft report, with recommendations developed by a small panel of experts in oncology and radiology, was distributed with a 4-item survey in February and March 2006 to a broader group of Ontario radiologists and oncologists for review as part of an external consultation process. The external consultation included the 34 members of the provincial Lung Cancer Disease Site Group and 25 other Ontario health care providers. Among the 16 respondents (27%), which included one radiologist, one respirologist, four surgeons, five radiation oncologists, and five medical oncologists, 15 completed the report survey and 12 provided written comments. Fourteen respondents agreed that the methods used in the report development were appropriate; one neither agreed nor disagreed. Thirteen respondents agreed with the draft recommendations as stated, that the recommendations should be approved as guidelines for practice, and that they would follow the recommendations of the report. One respondent neither agreed nor disagreed with the latter three points and one disagreed, recommending that full staging be used for all patients. The report was also reviewed by the Program in Evidence-Based Care (PEBC) Report Approval Panel, who acknowledged the limited evidence base for the report and agreed the recommendations were clear.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

These recommendations were developed by radiology and oncology experts in Ontario and are informed by research evidence and clinical expertise.

Lung Cancer			
Clinical/Diagnostic Problem	**Investigation***	**Recommendation**	**Comment**
Staging (with the	Computed	Indicated	• Chest and upper

Lung Cancer			
Clinical/Diagnostic Problem	**Investigation***	**Recommendation**	**Comment**
exception of cerebral metastases)	tomography (CT)	(primary)	abdomen imaging for all patients prior to the institution of a definitive treatment plan • In asymptomatic patients with stage I or II non-small cell lung cancer (NSCLC), the utility of extensive screening for metastatic disease is unproven; however, in practical terms, addition of upper abdominal CT to the initial CT thorax in investigation of possible lung masses probably represents optimal utilization of resources.
	Magnetic resonance imaging (MRI)	Indicated (supplementary)	• Chest and upper abdomen imaging for specific patients as indicated in the American College of Chest Physicians (ACCP) guidelines (i.e., for evaluation of the brachial plexus or vertebral column in patients with NSCLC involving the superior sulcus) and when cardiac or mediastinal involvement is suspected. • Not indicated as the primary screening tool for the detection of other chest or abdominal metastases. • Abdominal MRI may be useful for

Lung Cancer			
Clinical/Diagnostic Problem	**Investigation***	**Recommendation**	**Comment**
			clarification of potential metastases to liver or abdomen identified by CT.
Detection of cerebral metastases	Cranial MRI	Indicated (limited, primary)	• Unless contraindicated (e.g., patient has a pacemaker), strongly recommended in symptomatic patients or asymptomatic patients with advanced NSCLC, small cell lung cancer (SCLC), and superior sulcus tumours for whom aggressive treatment may be appropriate. • Benefit for neurologically asymptomatic patients with early-stage NSCLC is unclear.
	Cranial CT	Indicated (limited, secondary)	Use when MRI is contraindicated.
Assessment of tumour response	CT	Indicated (primary)	In the absence of evidence, interval imaging with chest CT is reasonable with intervals likely based on the treatment schedule but at a frequency of no more than every 3 months.
	MRI	Indicated (supplementary)	Cranial MRI may be considered in follow-up of cranial metastases.
Follow-up and Recurrence	CT	Indicated (limited)	• Utility is dubious for post-treatment staging or routine screening of asymptomatic patients. • Conduct of imaging tests should be
	MRI	Indicated (limited)	

Lung Cancer			
Clinical/Diagnostic Problem	**Investigation***	**Recommendation**	**Comment**
			guided by: • The potential for recurrence according to the initial disease stage and treatment • The implications of a positive test for subsequent treatment (including palliation). • The use of a single imaging test should be considered unless multiple modalities will contribute to the treatment plan.

* CT scans may be used with or without intravenous contrast

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are supported by evidence-based guidelines, one report evaluating quality indicators, randomized trials, comparative cohort studies, pooled analyses of case series reports, and case series reports.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate use of cross-sectional imaging in lung cancer

POTENTIAL HARMS

Not stated

CONTRAINDICATIONS

CONTRAINDICATIONS

Cranial magnetic resonance imaging (MRI) is contraindicated in patients with pacemakers

QUALIFYING STATEMENTS

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Care has been taken in the preparation of the information contained in this document. Nonetheless, any person seeking to apply or consult the recommendations in this report is expected to use independent medical judgment in the context of individual clinical circumstances or seek out the supervision of a qualified clinician. Cancer Care Ontario makes no representation or guarantees of any kind whatsoever regarding their content or use or application and disclaims any for their application or use in any way.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006 Apr 18

GUIDELINE DEVELOPER(S)

Program in Evidence-based Care - State/Local Government Agency [Non-U.S.]

GUIDELINE DEVELOPER COMMENT

The Program in Evidence-based Care (PEBC) is a Province of Ontario initiative sponsored by Cancer Care Ontario and the Ontario Ministry of Health and Long-Term Care.

SOURCE(S) OF FUNDING

Cancer Care Ontario
Ontario Ministry of Health and Long-Term Care

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

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GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Cancer Care Ontario Web site.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Browman GP, Levine MN, Mohide EA, Hayward RSA, Pritchard KI, Gafni A, et al. The practice guidelines development cycle: a conceptual tool for practice guidelines development and implementation. J Clin Oncol 1995;13(2):502-12.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on October 29, 2006. The information was verified by the guideline developer on November 24, 2006.

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